

WHAT IS CLAIMED IS:

1. A vehicle spare tire pressure detection assembly comprising:
 - a stationary tire support structure configured and arranged to be coupled to a vehicle;
 - 5 a tire hoisting device configured and arranged to lower a spare tire relative to the stationary tire support structure and raise the spare tire against the stationary tire support structure to apply an initial compression force to deflect a wall of the spare tire, the tire hoisting device including
 - a detecting device configured and arranged to detect a change in the initial
 - 10 compression force, and
 - an adjustment device configured to raise the spare tire and maintain the initial compression force in response to the change in the initial compression force detected by the detecting device;
 - a tire pressure detection unit operatively coupled to the tire hoisting device and
 - 15 configured to determine a change in spare tire pressure of the spare tire based on the change in the initial compression force detected by the detecting device; and
 - a signaling device configured to produce a human detectable signal upon a determination of a decrease in the spare tire pressure below a predetermined threshold amount.
- 20 2. The vehicle spare tire pressure detection assembly according to claim 1, wherein
 - the tire hoisting device is a winch having a motorized winding unit, a retractable windable member with a first end coupled to the winding unit, and a movable tire support
 - 25 member coupled to a second end of the retractable windable member.
3. The vehicle spare tire pressure detection assembly according to claim 2, wherein
 - the detecting device is configured to detect the change in the initial compression
 - 30 force of the spare tire based upon a decrease in an initial tension of the windable member that corresponds to the initial compression force applied to the wall of the spare tire; and

the tire pressure detection unit is configured to determine the change in the spare tire pressure of the spare tire based on an amount of retraction of the windable member by the adjustment device which raises the spare tire to maintain the initial compression force in response to the decrease in the initial tension of the windable member detected by the
5 detecting device.

4. The vehicle spare tire pressure detection assembly according to claim 3,
wherein
the windable member includes at least a cable portion.
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5. The vehicle spare tire pressure detection assembly according to claim 3,
wherein
the signaling device is configured to produce a visual signal to an occupant of the
vehicle.
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6. The vehicle spare tire pressure detection assembly according to claim 3,
wherein
the signaling device is configured to produce an audible signal to an occupant of
the vehicle.
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7. The vehicle spare tire pressure detection assembly according to claim 1,
wherein
the signaling device is configured to produce a visual signal to an occupant of the
vehicle.
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8. The vehicle spare tire pressure detection assembly according to claim 1,
wherein
the signaling device is configured to produce an audible signal to an occupant of
the vehicle.
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9. The vehicle spare tire pressure detection assembly according to claim 1,
wherein

the stationary tire support structure includes a plurality of tire contacting points
that are configured and arranged to contact the wall of the spare tire at a plurality of
5 circumferentially spaced apart locations.

10. A vehicle spare tire pressure detection assembly comprising:
support means for supporting a spare tire to a vehicle;
tire hoisting means for lowering the spare tire relative to the support means and
10 raising the spare tire against the support means to apply an initial compression force to
deflect a wall of the spare tire, the tire hoisting means including
detecting means for detecting a change in the initial compression force, and
adjusting means for raising the spare tire and maintaining the initial
compression force in response to the change in the initial compression force
15 detected by the detecting means;
tire pressure detection means for determining a change in spare tire pressure of the
spare tire based on the change in the initial compression force detected by the detecting
means; and
signaling means for producing a human detectable signal upon a determination of a
20 decrease in the spare tire pressure below a predetermined threshold amount.

11. A spare tire monitoring method comprising:
raising a spare tire to apply an initial compression force to deflect a wall of the
spare tire;
25 monitoring changes in the initial compression force on the spare tire;
further raising the spare tire to substantially maintain the initial compression force
on the wall of the spare tire;
determining a change in the tire pressure of the spare tire based on a change in the
initial compression force; and
30 producing a human detectable signal upon a determination of a decrease in the
spare tire pressure below a predetermined threshold amount.

12. The spare tire monitoring method according to claim 11, wherein
the raising of the spare tire is accomplished by using a winch having a motorized
winding unit, a retractable windable member with a first end coupled to the winding unit,
and a movable tire support member coupled to a second end of the retractable windable
5 member.

13. The spare tire monitoring method according to claim 12, wherein
the monitoring of changes in the initial compression force on the spare tire is
accomplished by detecting a decrease in an initial tension of the windable member that
10 corresponds to the initial compression force applied to the wall of the spare tire; and
the determining of the change in the tire pressure is accomplished by detecting an
amount of retraction of the windable member by the motorized winding unit which is used
during the further raising of the spare tire to substantially maintain the initial compression
force in response to the decrease in the initial tension of the windable member.

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14. The spare tire monitoring method according to claim 13, wherein
the producing of the human detectable signal includes producing a visual signal to
an occupant of a vehicle.

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15. The spare tire monitoring method according to claim 13, wherein
the producing of the human detectable signal includes producing an audible signal
to an occupant of a vehicle.

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16. The spare tire monitoring method according to claim 11, wherein
the producing of the human detectable signal includes producing a visual signal to
an occupant of a vehicle.

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17. The spare tire monitoring method according to claim 11, wherein
the producing of the human detectable signal includes producing audible signal to
an occupant of a vehicle.